What is claimed:

1. A system for the introduction of controlled correlation among multiple redundant representations of a predictively encoded signal in order to reduce predictive mismatch at a receiver when any given sub-set of the multiple representations is received, comprising:

an encoding device comprising:

A) a signal source, the signal source transmitting a signal over a channel, wherein the channel comprises at least two transmission channels;

B) at least two signal adding means wherein each adding means receives the signal transmitted from the signal source and forms a coefficient by subtracting a differing predictive value from the signal and outputting the respective coefficient values;

C) at least two signal quantizing means for receiving a differing coefficient value from the adding means, wherein the quantizing means perform the operations of quantizing the received coefficient values and outputting a resultant values;

D) at least two encoder means for receiving the coefficients from the signal quantizing means, wherein the encoder performs the operation of transforming the received coefficients and transmitting the resulting scalar coefficient values, where the number of the transmitted scalar coefficients is less than the number of coefficients values generated by the transformation; and

a decoding device, wherein the decoding device receives a first set of coefficient values from the encoding device, the decoding device comprising:

A) at least two signal adding means for respectively receiving the coefficient values and adding at least one value which is a transform of the difference between two predictive values to the coefficient value in order to generate a second set of coefficient values;

B) a decoding means for receiving the coefficient values transmitted from the adding means wherein the decoding means transforms and transmits the second set of coefficient values;

C) a signal adding means for receiving the coefficients generated by the decoding means, wherein the adding means further generates a third set of coefficient values, the third set of coefficients being used to reconstruct an approximate version of an encoded signal.

2. An encoding system for transmitting predictively encoded signals over a plurality of channels, the system comprising:

A) a signal source, the signal source transmitting a signal over a channel, wherein the channel comprises at least two transmission channels;

B) at least two signal adding means wherein each adding means receives the signal transmitted from the signal source and forms a coefficient by subtracting a differing predictive value from the signal and outputting the respective coefficient values;

C) at least two signal quantizing means for receiving a differing coefficient value from the signal adding means, wherein the quantizing means perform the operations of quantizing the received coefficient values and outputting a resultant values;

D) at least two encoder means for receiving the coefficients from the signal quantizing means means, wherein the encoder performs the operation of transforming the received coefficients and transmitting the resulting scalar coefficient values, where the number of the transmitted scalar coefficient values is less than the number of coefficients values generated by the transformation.

3. The encoding system of claim 2, wherein the transmitted scalar coefficient values are $S_1=\{X-P_0\}_{\Delta,1}^{\hat{T}}+\{P_0-P_1\}_{\Delta,1}^{\hat{T}}, S_1 \in \Re$ on a first channel and $S_2=\{X-P_0\}_{\Delta,2}^{\hat{T}}+\{P_0-P_2\}_{\Delta,2}^{\hat{T}}, S_2 \in \Re$ on a second channel and X represents a two coefficient vector of the signal from the signal source, P_0 is a prediction value of X comprised of information from at least a first and second channel, P_1 is a prediction value of X comprised of information received from only a first channel, P_2 is a prediction value of X comprised of information received from only a second channel and $\Re$ is the general linear minimum mean squared error predictor of the coefficients of X.

4. A decoding system for decoding a predictively encoded sequence of symbols transmitted over a plurality of channels, wherein more than one subset of the channels can be used to reconstruct an approximate version of the encoded sequence of symbols, the system comprising:

a central decoding means, wherein the central decoder means receives a first set of coefficient values from at least two channels, the central decoding means comprising:

a) at least two signal adding means for respectively receiving the first set of coefficient values and adding at least one value which is a transform of the difference between two

predictive values to the coefficient values in order to generate a second set of coefficient values;

b) a decoding means for receiving the coefficient values transmitted from the adding means wherein the decoding means transforms and transmits the second set of coefficient values;

c) a signal adding means for receiving the coefficients generated by the decoding means, wherein the adding means further generates a third set of coefficient values, the third set of coefficients being used to reconstruct an approximate version of an encoded signal.

5. The decoding system of claim 4, further comprising at least two side decoders.

6. The decoding system of claim 5, wherein the side decoders receive the first set of coefficient values transmitted from one of the at least two channels.

7. The decoding system of claim 6, wherein the side decoders comprise a decoding means, the decoding means transforms the first set of coefficients received from the channels.

8. The decoding system of claim 7, wherein the side decoder further comprises a signal adding means for receiving the coefficients generated by the decoding means and subsequently generating a second set of coefficients by adding a function of the received first set of coefficient values to the first set of coefficient values.

9. A method for decoding a predictively encoded sequence of symbols transmitted over a plurality of channels, such that more than one subset of the channels can be

used to reconstruct an approximate version of the sequence, the method comprising the steps of:

A) receiving coefficients from at least two channels;

B) forming a second set of coefficients in which each coefficient is generated by taking a function of the difference of predicted values generated using information from two different subsets of the total number of channels;

C) generating a third set of coefficients by adding a function of the received coefficients from step A to corresponding coefficients from step B;

D) reconstructing an approximate version of the transmitted signal by further decoding the third set of coefficients from step C.

10. The method of claim 9, further comprising the step of receiving a first set of coefficients at least two side decoders.

11. The method of claim 10, further comprising the step of the side decoders transforming the first set of coefficients received from the channels and generating a second set of coefficients by adding a function of the received coefficients from the first set of coefficient values to the first set of coefficient values.

12. The method of claim 11, further comprising the step of reconstructing an approximate version of the transmitted signal by further decoding the second set of coefficients.

13. The method of claim 9, wherein the step of generating a third set of coefficients is accomplished by directly copying a function of the coefficients from step A without any addition.

14. A method for encoding and transmitting predictively encoded sequences of symbols over a plurality of channels, the method comprising the steps of:

A) receiving a source signal from at least two channels;

B) forming a coefficient by subtracting a differing predictive value from the signal and outputting the respective coefficient values;

C) receiving a differing coefficient value at at least two quantizing means, wherein the quantizing means perform the operations of quantizing the received coefficient values and outputting the resultant values;

D) transmitting the coefficients from the quantizing means to at least two encoders, wherein the encoders perform the operation of transforming the receive coefficients and transmitting the resulting scalar coefficient values, where the number of the transmitted scalar coefficients is less than then the number of coefficients values generated by the transformation.

15. The method of claim 14, wherein the transmitted scalar coefficient values are $S_1=\{X-P_0\}^{\hat{T}}_{\Delta,1}+\{P_0-P_1\}^{\hat{T}}_{\Delta,1}, S_1 \in \Re$ on a first channel and $S_2=\{X-P_0\}^{\hat{T}}_{\Delta,2}+\{P_0-P_2\}^{\hat{T}}_{\Delta,2}, S_2 \in \Re$ on a second channel and X represents a two coefficient vector of the signal from the signal source, P_0 is a prediction value of X comprised of information from at least a first and second channel, P_1 is a prediction value of X comprised of information received from only a first channel, P_2 is a prediction value of X comprised of information received from only a second channel and $\Re$ is the general linear minimum mean squared error predictor of the coefficients of X.

16. A computer program product that includes a computer readable medium useable by a processor, the medium having stored thereon a sequence of instructions which, when executed by the processor, causes the processor to decode a predictively encoded sequence of symbols transmitted over a plurality of channels, such that more than one subset of the channels can be used to reconstruct an approximate version of the sequence, wherein the computer program product executes the steps of:

A) receiving coefficients from at least two channels;

B) forming a second set of coefficients in which each coefficient is generated by taking a function of the difference of predicted values generated using information from two different subsets of the total number of channels;

C) generating a third set of coefficients by adding a function of the received coefficients from step A to corresponding coefficients from step B;

D) reconstructing an approximate version of the transmitted signal by further decoding the third set of coefficients from step C.

17. The computer program product of claim 16, further comprising the step of receiving a first set of coefficients from a channel.

18. The computer program product of claim 17, further comprising the step of transforming the first set of coefficients received from the channel and generating a second set of coefficients by adding a function of the received coefficients from the first set of coefficient values to the first set of coefficient values.

19. The computer program product of claim 18, further comprising the step of reconstructing an approximate version of the transmitted signal by further decoding the second set of coefficients.

20. The computer program product of claim 16, wherein the third set of coefficients is generated by directly copying a function of the coefficients from step A without any addition.

21. A computer program product that includes a computer readable medium useable by a processor, the medium having stored thereon a sequence of instructions which, when executed by the processor, causes the processor to encode and transmit predictively encoded sequences of symbols over a plurality of channels, wherein the computer program product executes the steps of:

A) receiving a source signal from at least two channels;

B) forming a coefficient by subtracting a differing predictive value from the signal and outputting the respective coefficient values;

C) quantizing the coefficient values and outputting the resultant values;

D) transforming the quantized coefficients and transmitting the resulting scalar coefficient values, where the number of the transmitted scalar coefficients is less than then the number of coefficients values generated by the transformation.

22. The computer program product of claim 21, wherein the transmitted scalar coefficient values are $S_1 = \{X - P_0\}_{\Delta,1}^{\hat{T}} + \{P_0 - P_1\}_{\Delta,1}^{\hat{T}}, S_1 \in \Re$ on a first channel and $S_2 = \{X - P_0\}_{\Delta,2}^{\hat{T}} + \{P_0 - P_2\}_{\Delta,2}^{\hat{T}}, S_2 \in \Re$ second channel and X represents a two coefficient vector of the signal from the signal source, P_0 is a prediction value of X comprised of information from at least a first and second channel, P_1 is a prediction value of X comprised of information received from only a first channel, P_2 is a prediction value of X comprised of information received from only a

second channel and $\Re$ is the general linear minimum mean squared error predictor of the coefficients of X.